Regional Perspectives: Minnesota

Introduction by Ed Squiers

Our next speaker is Doug Norris, who comes to us from Minnesota. He is their Wetlands Program Coordinator. He is going to talk to us a little bit about the Minnesota Routine Wetland Assessment Method (MnRAM).

Doug Norris, Minnesota DNR Wetlands Program Coordinator

I would like to start by thanking Gwen for inviting us to come down. I think this is a good exercise, to get up here in Indiana and help develop a functional assessment method.

I'm going to talk about the Minnesota experience, and I'm going to concentrate primarily on the Minnesota Routine Assessment Method. Here's an outline of what I plan to discuss. I want to give some background development of the routine assessment methods. Then I'll talk about the overall approach or philosophy of it; talk a little about the uses in Minnesota; then go through the methods. You should all have a copy of the memorandum (it was in the pile of papers at your places yesterday). So I'd like to go through it fairly briefly just to give you some exposure to what is in it. Then when we are done, I'll talk about some of the pros and cons of this. I'll go through a lot of this very quickly, so we can have some questions at the end.

I'll start with some information on the background or history of functional assessments in Minnesota. This isn't the first attempt at developing functional assessment. Back in the mid- to late-80s, a group got together and developed a thing called the Minnesota Wetlands Evaluation Methodology. This was really a pretty good assessment method–the problem with it is that it is very data intensive. It takes a lot of time to do it, and the fact that it's so data intensive means that hardly anybody ever uses it. In the 10 years that I've been in Minnesota, I don't think that I am aware of anybody ever having applied this. So, it's there, and it's pretty quick, it just doesn't get used. We have also for many years used HEP, for evaluating the debits and credits for wetland mitigation banks. But when the Wetland Conservation Act was passed in 1991, it generated a need for new assessment methods. The Act suddenly put hundreds of people to work, regulating wetlands at the local level. And so as a result of that, we needed an assessment method that was simple and relatively quick for them to use. And so we started looking around for different assessment methods, and we developed the MnRAM. It was adapted from the Wisconsin Rapid Assessment Method. We modified it, and by the time we got done with it, it wasn't rapid any more, so we called it the Minnesota Routine Assessment Method.

You'll notice that it says "draft" on the cover. We have just made one modification, and I think we're calling this Version 2. We're going to be meeting here in the next couple of weeks to get some comments on that; we've been collecting comments and we're going to finalize Version 2. So it's kind of a work in progress–we modify it and improve it as people use it.

As far as the overall approach or the zero characteristics of the method, you know there are different types of assessments. I was at the Wetland Assessment Conference in Baltimore about a year ago. One of the speakers there characterized wetland assessments as 1 of 3 types, I think (somebody correct me if I don't get this exactly right). But there are methods that actually measure reality, there are methods that measure an indicator of reality, and there are methods that measure a perception of reality. MnRAM was intended to be and to document professional judgement. As a result of that, it's critical that the person who's doing it have good experience and training. And in fact it says right up front, on the very first line in the user advisory of MnRAM, that you need to have experience and training in wetland evaluation in order to implement it. There is some concern, I think, over the fact that we have hundreds of people who are using MnRAM in Minnesota, and that we may be falling down on that count a little bit. But that was the original intent of MnRAM–objectively and systematically document the kinds of things that you look at and deciding, is this a good or a bad wetland? It relies on reference wetlands. Just like HGM, you use reference scenes, wetlands under HGM to calibrate your assessments of the wetlands. So generally you go out and get the best example of that type of wetland in a given area, and use that to calibrate your assessments.

Try to include a mix of functions and values, it's not purely a functional assessment method. It does include values–one of the reasons we get that is because the Wetland Conservation Act stipulates certain wetland values that need to be taken into account in wetland conservation in Minnesota. And it's also a sort of pragmatic approach–it gives people information that they want to know about. MnRAM does not result in the overall score or rating; this is the Michigan example. But we wanted to keep the individual evaluation separate. We think that results in better decisions, rather than amalgamating everything into a single score for the wetland.

How do we use MnRAM of Minnesota? It is atypical, with most assessment methods we use it for comparing alternative impact proposals. We use it to relate impacted wetlands to protected mitigation wetlands; help them see how things are going to turn out; what are the trade-offs on functions and values. These are monitored for the development of that restored or created wetland. And then we also use it in land use planning. As far as doing data bases, some communities have gone out and done MnRAM for the wetlands in their community. They put it into a database located in Michigan. And they use it for prioritization of planning for how they want to manage wetlands in those communities.

I'd like to go through the method with you real quickly, so if you've got your copy, pull it out. I expect there'll be a lot of questions generated, but if you can, hold your questions to the end, so we can make sure we get through it all.

On page 1 you can see this method starts out with user advisories. And again, the first sentence talks about the need for training and experience in wetlands landscape before it can be accurately applied. You can't stress that often enough. There is some information on size and

scale, and basically the bottom line is that you need to take into account both the landscape scale and site-specific perspectives. You need to know where the wetland sits in the landscape in order to properly implement the method. It talks about reference wetlands, or a standard reference wetland, the highest level of overall sustainable functional capacity. This is similar to the HGM stuff. In some circumstances, it says it's acceptable to use a virtual reference wetland. If you have a good handle on what's going on in your area; if you know what a really good bog is in your area, it's not necessarily necessary to go out and actually look at that. In a way, you use reference or virtual reference wetlands. Obviously, there has to be some data to be a little bit careful about that. But it does allow for that. Wetland ranking–it says you cannot use this method to compare wetlands in different comparison domains. It is saying that it is probably not fair to compare a typical type 3 duck marsh in downtown Minneapolis with one out in the wilderness. They're under different landscapes, under different constraints, so you need to keep that landscape scale in mind.

On page 2 there is a section on functions and values, and this is just a little lecture to indicate that we do, in fact, know what the difference is between functions and values–to make sure that the user keeps that in mind as well. There are some references and then there is a list of guilty parties on page 3. Starting on page 4, there are some administrative details, what wetland is this, the scope and limitations of this assessment, what's the classification, the coordinates, NWI classifications, etc.

On page 5 there's really the end result of the method and this is what you end up filling out at the very end. This list shows the functions and values that the method evaluates. And as you can see, there are some purely functional things such as floral diversity and integrity or maintenance types of hydrologic regimes. But then there are value-related things such as water quality protection, esthetics, recreation, etc. So there is a mix of all these things in here. And throughout the evaluations, the questions take you through some accounting of full functional and value related aspects of it. So this is the end result. This is what you have in the end. And as you can see, there are no overall scores. In fact we left them as low, medium, high, and exceptional. We didn't even put numbers on them because we didn't want anybody to start adding those things up for overall scores. Although I have to admit that some communities in Minnesota have done that on their own.

Starting on page 6, there is some descriptive stuff, type of setting, hydrogeomorphology, predominate hydroperiod, and so forth. On page 7 (characterization of vegetation), you can get a pretty good picture of what this wetland looks like. There's some information on soil that needs to be filled out. And finally on page 8, where the wetland sits and what the surrounding land use is. The point of all this is so you can look at it and have a pretty good picture of what the wetland looks like.

The actual functional assessment starts on page 9. The questions are only provided to guide and document the evaluation. After completing each section, a trained evaluator should

consider the factors using best professional judgement to rate their capability as compared to a reference wetland in the same wetland comparison domain. So again, trained evaluators using reference wetlands: how do these evaluated wetlands compare to that reference? The first part of the functional assessment is special features, and these are the typical red or yellow flags that need to be taken into account.

On page 10, we get into floral diversity and integrity, and again, this is more of a functional thing, sort of similar to what HGM might do. The fist step of this section is to key out the wetland community. We use an excellent reference book that we have in Minnesota and Wisconsin that was done by the Corps of Engineers. If you're interested in this book, it tells you where to get a copy in that first section. But we use this book for the key that's in here. And then if you go back to starting on page 12, we've essentially done the best professional judgement for the evaluator in this case. In this case it was Steve Edgar, who is our botany guru in Minnesota, with some other botanists. They gave their indications of what they think are high, moderate, and low quality for each wetland community. So for instance, on page 12, for shallow, open water communities, there's a high quality wetland that is diversified, then dominated by 3 or more species of native aquatic plants and so forth. Low quality would be one dominated by milfoil or lacking aquatic vegetation. So we've sort of gone through here and given the evaluator a clue as to how a wetland should be rated for vegetative diversity and integrity. So, you key out your community and then go through the end and follow these guides to get an overall rating. If there are mitigating factors, some things in particular that you know about, you can modify these things. But this is pretty straightforward to use.

At the very end, you end up getting a rating on page 16. You fill out for the vegetative community what the functional level was. High, medium, or exceptional, etc.

The next section is the maintenance of characteristic hydrologic regime. Again, this was taken straight out of HGM. In fact, it was adapted from the very popular model that was worked out for Minnesota, North Dakota, and South Dakota. We're getting the integrity of the wetland. We're trying to get an idea of how the hydrology of this wetland is operating, and the questions we use deal with the outlook characteristics, dominant land use, and so forth. The bottom line is how relatively undisturbed the wetland is. If it hasn't been ditched, if it hasn't been drained, if it doesn't have a constructed outlet, and so forth, you end up with a high rating for the maintenance and characteristic and life regime. And on page 16, you go through a series of questions and answer them. Then on page 17, there's user guidance. It says to use a predominant rating of high, medium, or low for all factors, to identify the wetlands function level. You answer the questions and then use your answers to get a best professional judgement about that maintenance of characteristic hydrologic regime.

On page 21 there's a water quality function. This is probably a more value-oriented thing. It combines some purely functional aspects with value-oriented measures. For instance, question 3 on page 21 is a functional question: does the wetland's shape, flow inputs, and outlet

configuration allow adequate residence time, so its sediments can settle? That's strictly a functional related aspect. But then look at number 7. It asks if there are recreational lakes or watercourses or water supply downstream. That again brings in some value-oriented things. It gets into the opportunity. This is the opportunity to protect something downstream.

Again, the user guidance for water fault and protection–this was a very difficult one for us to deal with. We had some very bitter arguments about how to come up with the rating for water quality overall, and you can see that the guidance is maybe not particularly helpful. This is one that probably needs to be beefed up a little bit. In practice, we found that we input water mediums. You get some highs and it's pretty hard to get a low on water quality with this method. You get a lot of mediums, though.

The next section is shoreline protection. That's fairly straightforward: is the wetland adjacent to a lake or a river, and is there vegetation that anchors the shoreline? On page 23 there's a groundwater interaction. This one started out simple, and we found out that when we did it in the field, we rarely had enough information to make any kind of judgement about what's happening with the groundwater. So we revised it; we gave it to a hydrologist and he gave us 5 or 6 pages of stuff back, so it's got to be fairly complex. But I think it gives us a little more confidence that we're coming up with something good. Or something fairly accurate. The way this one works is that you evaluate the wetland and classify it as to the type of wetland it is. As to whether it is a groundwater depression wetland, surface water depression, groundwater slope, or surface water slope. And there is some information starting on page 24 that helps you evaluate what type of wetland it is. As you can see, on the bottom of page 24, it says that the default groundwater interaction function level for groundwater depression wetland is high. So we made a judgement that for that particular type of wetland, the default rating is high. And we did that for each of the 4 different types, and you can see what they all are. A surface water depression is medium, groung water slope is high, and surface water slope is low. So you take these default ratings and then starting on page 26, you look for other on-the-ground indicators that might modify that default rating. And there's a table of groundwater destruction on page 27. If you have some of these indicators you can modify the ratings, depending on what those indicators are. We found that most of the time when going to the fault, you don't have enough on-site information to modify those. But, if you want to really get into it, the mechanism is there to modify those as you see fit. So that's the groundwater interaction.

On page 32 is the wildlife habitat. Being a wildlife biologist, I can say a few words about that. We changed our mind-set with the wildlife habitat part when we developed this. You know previous assessment methods of this type emphasize structural diversity and rations of open water to vegetation and overall animal species, as an indication of good wildlife habitat. Well that doesn't work very well for all wetland types. In numbers, it's unfair to compare a typical spruce bog with a duck marsh. They're different types of wetlands, and they have different suites of animal species, so we decided not to make any value judgements about one being better than others. So we went with a more functional approach that is probably better called maintenance of

animal species integrity, rather than wildlife habitat. And we've gotten some comments about that. We may want to go back and do another section that gets at more typical wildlife related values, such as hunting, bird watching, and so forth. But this version ended up related more toward if it's a good example of a wetland of that type, than if it's good wildlife habitat. That's the end result of the method.

And so, starting on page 32, it points out that users must have at least a basic understanding of fish and wildlife habitat requirements to employ this. Again, these are some of the red and yellow flags. There are some questions on habitat structure–obviously wetland structure relates to a reference wetland, that type of comparison domain. There are some questions on habitat and the interspersion and kind of activity, where it sits within the landscape, whether it provides a travel border between habitats, and so forth. And then there are questions 9, 10, and 11 that start some landscape-scale things such maintenance of regional biologic diversity. There are some value implications in here. For instance, question number 10: does the wetland represent the only or nearly the only wetland habitat within the wetland comparison domain? So we've made some judgement that if it's the only wetland there, it has value. Even though it may not be the best wildlife habitat; even though it may be somewhat degraded, we made a judgement that that should be taken into account. The guidance then gives you some information on how to apply these questions. It tells you how to assign exceptional, low, high, etc. I've been accused of rigging this so that it's extremely difficult to get a low rating for wildlife, and it's probably true. It is hard to get a low rating. Essentially, the wetlands that have been really trashed out or practically denuded of vegetation are the only ones that get the low rating. So we may be open to that criticism, but so be it.

On page 35, we have esthetics, recreation, etc. These are purely cultural, purely value-driven things. We had to evaluate these, so we asked a bunch of questions about what are the educational esthetics, and so forth. It's kind of hard to evaluate that, especially esthetics, because that's kind of a personal thing, but a lot of these come down to accessibility. If you want to get a high rating, it has to be accessible to people. And that sort of comes out in the user guidance there.

Commercial uses–in order to get an exceptional rating, you have to be able to get the commercial use out of it without hydrologic or vegetative modification. We don't want to assign a high rating if you have to trash the wetland in order to get the commercial use out of it. So exceptional ratings are based on it being sustainable. The last couple of pages are just lists of certain endangered species. And that is just a quick overview of the method.

Now some quick pros and cons that we found through application or messages. It is relatively rapid–it can be done in 1-3 hours for most wetlands. It provides the results that are immediately useful, and it doesn't provide some functional indices that may not have a lot of application to the real world. It is applicable in a variety of situations, and it is used widely in Minnesota right now.

Some of the cons for the method are that it relied heavily on the education of the user, and that you may not get consistent results from one user to the next. We found that you get the best results when it's implemented by a team of people who have different expertise, and they are all out there looking at the wetland at the same time. It's not particularly rigorous, it doesn't have a lot of hard data. And in that respect, it may not hold very well in disputed cases or in litigation (although I understand that the court has used the Wisconsin method in litigation, and it came out okay). The scale of the method is not very fine. In other words, it just goes from low to exceptional, and we find that we get a lot of mediums, so it is sometimes hard to make fine distinctions between different levels.

So that's MnRAM. I have just a few minutes left. I promised just a little bit of information on the wildlife or integrity stuff we're working on, and I'm not going to repeat some of this stuff that Tom went through yesterday. But I did want to show that we have done some testing and development of the bio-criteria in Minnesota. We tested a number of wetlands throughout the central part of the state, and here are some quick results. They evaluated 20 or 30 different wetlands. This is the wetland vegetation and integrity index, and what they found is the fact that these reference wetlands–the wetlands that should be the best examples of the kinds–did come out on top, and that the wetlands that were impacted by storm water or agricultural impacts, kind of arranged themselves lower, using their vegetation methods. And then there were some similar results for their invertebrate sampling. They did a scatter plot and found that for the invertebrate metrics, the reference wetlands did array themselves high. And then you had impacted wetlands as a result of agriculture or salt water. Again, they arranged themselves. And so I guess what I would like to point out is that we haven't completely hitched ourselves to this MnRAM wagon, we are going ahead with the development of these biotic indicators and at some point in the future, we may find some way to merge these things, or to use both these tools where appropriate. So, we are heavily involved in that as well. Any questions?

Question:
This is for you, Doug and also for Don, I guess; it kind of relates to both of you. There seems to be a philosophical difference in approach. I would characterize it as a function-based approach where you are at the outset of functions that are performed by wetlands in general, and then going out and determining whether or not different wetland types indeed perform their functions. And their value (or their rating or score) is largely set upon whether they perform those functions. And that is very different from the other approaches which say what different types of wetlands are out there, what specific functions they perform, and whether they perform them to some level of reference. Are you concerned that the first approach leads to the loss, perhaps, of certain types of wetlands?

Answer:
Yes, there is that danger. I have to admit that I've not been a big cheerleader for MnRAM. I worked in the state of the development of it. But there are aspects that are bothersome. We tried to fix that. The first version didn't include a section on maintenance of characteristics of

hydrologic regime. So we put something like that in as a purely functional thing, so that they don't rely on some of the typical value measurements that we're typically interested in. I used the bog example frequently, because those are wetlands up in northern Minnesota that people typically tend to discount as having much value. We want to be careful not to rate them low, simply because they are not doing a lot for storm water. If they are good bogs, we want them to come out high, because they do have this diversity–they provide wildlife habitat for particular species. They do have some sort of maintenance of hydrologic regime. So we tried to address that somewhat, but the method is still open to that criticism.

Question:
Where do you get these evaluations turned in from–mostly consultants?

Answer:
Yes, consultants do them, we have local communities, and Soil & Water Conservation District staffs do a lot.

Question:
Then does your agency have to agree with their assessment?

Answer:
Well, that gets into the whole regulatory picture. In Minnesota, we have section 401 operating just like it does in every other state. The DNR is an accommodating agency for the Corps on that just like anybody else, so we don't necessarily have to agree. If somebody does it for the 404 method, we don't have to agree. We may disagree, and we'll point that out to the Corps, but they can take it or leave it. Under the Wetland Conservation Act, we have a thing called a Technical Evaluation Panel for questions about functions and values. It is comprised of someone from the local government, someone from the Soil & Water Conservation District, and someone from the Board of Water Resources, which is another state agency. We (DNR) are not part of that Technical Evaluation Panel. We are often invited to participate, but if it comes to a vote, it's those 3 people who vote. So again, if you asked if our agency has to agree–by law, no. We can weigh in on it, but DNR doesn't have the authority to take action.

Thank you very much.